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TITLE: System and method for motion vector generation and analysis of digital video clips

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INVENTOR-INFORMATION:

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US-CL-CURRENT: 375/240.16, 375/240.24

ABSTRACT:

Given a digital video clip, this invention describes how to efficiently compute the motion vectors and motion trajectory of each identified video object for facilitating various commonly encountered visual applications, such as video compression for transmission and archiving, security and surveillance monitoring, and search-by-query required in the Internet search engine or digital library.

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Summary of Invention Paragraph - BSTX (19):
[0017] In summary, these and other objects of the present invention are achieved by a system comprising means for generating motion vectors using any one of available fast block-matching motion estimation techniques organized and integrated in a scalable fashion to optimally meet the demand of various tradeoffs (such as, speed-up gain, complexity, video quality, etc.), means for realizing the core of these motion estimation techniques for hardware implementation, means for smoothing noisy **raw data,** means for clustering the motion-vector data and validating the clusters so as to automatically detect the video objects, means for estimating motion trajectory of each detected video object, means for comparing each derived motion trajectory curve with respect to a database of motion trajectories, means for receiving a query trajectory and means for identifying video clips having video objects best matching the query motion trajectory.

Detail Description Paragraph - DETX (55):
[0084] The invention of extracting motion trajectories of moving video objects (VOs) based on macroblock motion vectors (MVs) comprises three phases: 1) Motion-vector field denoising, 2) **Unsupervised clustering** and 3) Bi-directional motion tracking.